

The Impact of Perceived of Cyber Fraud, Ease of Use and Risk Perception on the Behavior of Using E-Commerce Systems in Indonesia

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ABSTRACT

This study aims to examine the factors that influence interest in the use of e-commerce by using the Technology Acceptance Model (TAM) model developed by Davis (1989). This study uses survey methods in data collection. The sample of this research is the Jakarta, Bogor, Depok, Bekasi and Tangerang (Jabodetabek area) communities in Indonesia. A total of 180 respondents who have used e-commerce are processed using multiple linear regression. The results of the analysis for this model show that e-commerce usage behavior is positively influenced by ease of use and risk perception. While the perception of fraud in cyberspace is proven to have a negative effect on the interest in using e-commerce.

Keywords: Technology Acceptance Model, e-commerce, behavior, perception of cyber fraud, perceived ease, perceived risk.

1. Research Background

During the COVID19 pandemic, the rapid growth of the e-commerce market share in Indonesia can no longer be doubted. The number of users in 2019 of 80 million people or 30% increased sharply to 175.4 million from a total of 272.1 million people or around 64% of the total population in Indonesia. The e-commerce market is becoming a very tempting gold mine for some people who can see the potential going forward. This growth is supported by data from Bank Indonesia which records the number of online trade transactions each month reaching Rp 13 trillion in 2019. This amount will continue to rise along with the growth of smartphone usage, internet penetration in Indonesia, the use of debit and credit cards, and the level of consumer confidence to shop online. If we look at Indonesia as a vast archipelago, e-commerce is a market that has the potential to grow very large in Indonesia. In line with the statement of Matthew Driver, president of the MasterCard for the Southeast Asia region, Indonesia is one of the countries with the largest e-commerce market growth in Asia-Pacific. Although the number of sales in Indonesia is still low compared to other countries, but seeing the development of Indonesia is quite rapid, it is possible that our beloved country will compete with other Asian countries that have previously produced e-commerce sales above Indonesia.

E-Commerce which is the process of buying and selling products electronically by consumers and from company to company with a computer as an intermediary for business transactions relating to shopping transactions on Internet shopping. E-Commerce describes the broad scope of technology, processes and practices that can carry out transactions without using paper as a means of transaction mechanism. E-Commerce has had a major influence on the growth of the social and economic system of society. E-Commerce has become an important part of the private and public business sector. The development of the corona virus pandemic, which has a very wide impact and requires some people to limit activities outside the home, makes everyone more dependent on the internet. Online shopping activity from home is the main choice for almost all family members in Indonesia.

The many benefits that can be obtained if an individual or company is doing e-commerce, such as being able to reach customers throughout the world and can easily market goods at lower costs in marketing. Moreover, with the development of telecommunications and computerized systems at this time, it certainly greatly supports the smooth process of this e-commerce. However, in reality this facility is not fully used by the people of Indonesia. Indonesian people still like to do transactions traditionally or face to face. Many of the individuals who think that too much risk arises when doing e-commerce. The party who runs e-commerce itself needs to review and need to know what factors can influence the interest of individuals to use electronic transactions so that

those who run e-commerce or the company will better understand the factors that are the problem and improve the existing system.

Researchers analyzed what individual perception factors that influence transaction behavior through e-commerce. This study refers to previous studies conducted by Ainur Rofiq (2012), Andrie Cesario Shomad (2013) and Krisnu Putra Yutadi (2014). Ainur Rofiq (2012) conducted research on the impact of cyber fraud and trust on e-commerce systems on the interest to use e-commerce. The results of his research indicate that the perception of Indonesian consumer cyber fraud negatively affects interest in buying using e-commerce. Andrie Cesario Shomad (2013) shows that perceived ease of use has a positive effect, while risk perception has a negative effect on interest in using e-commerce. Krisnu Putra Yutadi (2014) shows that perceived ease of use and perceived risk have a positive effect on interest in using e-commerce. This research carried out during the COVID19 Pandemic period is expected to be able to complete, and expand the economics section and can be used as a reference material for business practitioners, policy makers related to ecommerce and future research.

2. Literatur Review and Hypthesis Development

2.1. Literature Review

One theory about the use of information technology systems that is considered very influential and is often used to explain individual acceptance of the use of technology systems is the Technology Acceptance Model (TAM). According to Davis (1989) TAM is a model used to predict user acceptance of technology based on two variables, namely perceived usefulness and perceived ease of use. TAM was first introduced by Davis in 1989. TAM was created specifically for modeling the adoption of information systems users. According to Davis (1986), the main purpose of TAM is to establish a basis for tracing the influence of external factors on the attitude (personalization) and goals of computer users. This study takes the scheme that the behavioral factors of using e-commerce systems are caused by individual factors such as perceived cyber fraud, perceived ease of use and perceived risk.

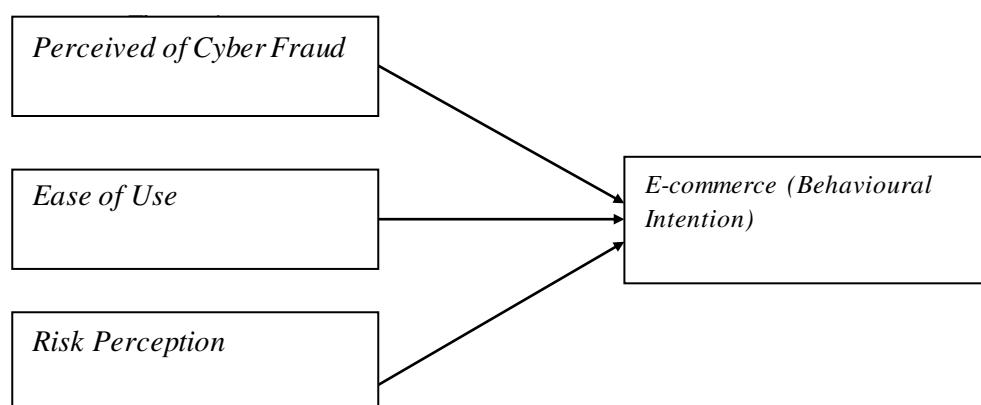


Figure 1. Framework for Thinking

2.2. Hypothesis Development

2.2.1. Impact of Perceived of Cyber Fraud on the behavior of using e-commerce

Online channels such as e-commerce are the main target of actors to increase fraud activities. In e-commerce, perpetrators can easily try fraudulent transactions because e-commerce is a unitary unlimited, has low costs, and there is high availability of stolen credentials (Montague, 2011: 66). Clough (2010: 5) argues that digital technology is vulnerable to crime such as the nature of technology including scalability, accessibility, anonymity, portability-transferability, global reach, and the absence of guardians. Evidence shows that money lost due to fraud in e-commerce is increasing and becoming large (Chuck 2002) with victims from both customers and vendors (Clough 2010: 185). Thus, online fraud (cyber fraud) emerged as an economic problem. The results of Ainur Rofiq's research (2012) show that the perception of cyber fraud negatively influences the intention to use e-commerce systems. Sisca Amalia (2016) also states that the interest in using e-commerce is negatively influenced by the perception of fraud in cyberspace.

This research argues that the higher the perception of cheating will reduce the interest in using e-commerce. Thus the researchers formulated an alternative hypothesis as follows:

H1: Perceived of Cyber Fraud has a negative effect on e-commerce usage behavior

2.2.2. Impact Perceived Ease of Use on the behavior of using e-commerce

Davis (1989) defines the perception of convenience as the level where someone believes that the use of information technology is easy and does not require a lot of effort from the wearer. Individual perception related to ease of use (perceived ease of use) is the level where individuals believe that using a particular system will be free from errors. Research conducted by Andrie Cesario Shomad (2013), Pradita and Zaki (2012), Iwan and Rahmahwati (2014), Krisnu Putra Yutadi (2014), Istianingsih and Wijanto (2008) and Istianingsih (2020) stated that perceptions of ease of use have positive effects on the interest and behavior of e-commerce usage. The results of this study are not consistent with research conducted by Pavlou (2001) which states that the perception of ease of use (perceived ease of use) has no significant effect on the interest in using e-commerce systems. The results of research by Istianingsih and Wijanto (2008), Sisca Amalia (2016), and Diah Iskandar and Istianingsih (2020) show that the interest in using e-commerce is positively influenced by the construct of perceived ease of use. The more the user perceives that using e-commerce is easy, the more intense he will use it. Thus this research proposes the first hypothesis as follows:

H2: Perceived Ease of use has a positive effect on e-commerce usage behavior

2.2.3. Impact Risk Perception on the behavior of using e-commerce

According to Pavlou (2001), Risk Perception is considered an important barrier for consumers who are considering whether to make a business transaction online or not. However, according to Engel (1995), the greater the perceived risk, the greater the possibility of the involvement of economic actors in the use of the system. Heijden et al (2003) conducted a study of a group of students who were members of an information systems course at the Duct Academic Institution. The results of the study mentioned that there is a very strong relationship between risk perception with the attitude of using online purchases. In a study by Nazar and Syahrani (2008), risk perception has a significant influence on the interest in using e-commerce systems. Respondents think that before they make a transaction with the e-commerce web they will collect information about the web. Based on this information respondents can predict how much risk they face when going shopping online. The more positive information about web e-commerce, the smaller the risk faced by respondents. Krisnu Putra Yutadi (2014) states that actions to reduce or reduce the level of risk will affect attitudes and will increase the use of e-commerce systems. Sisca Amalia (2016) shows that interest in using e-commerce is positively influenced by risk perception. This research proposes the following hypothesis:

H3: Perceived risk has a positive effect on e-commerce usage behavior

3. Research Methods

The location of this study is in the areas of Jakarta, Bogor, Depok, Tangerang and Bekasi (Greater Jakarta) The object of this study is the Community Users of e-commerce services. This research was conducted using a quantitative approach or method (quantitative approach).

3.1. Variable Definition and Operationalization

Perceived of Cyber Fraud

According to Kim et al (2008) and Warr (2000) the perceived of cyber fraud is the recognition and interpretation of someone who makes transactions on the internet that is vulnerable to losing money. This variable is measured by the following questions:

- a) I think that cyber fraud is a serious problem in society and the economy.
- b) I think that cyber fraud is harmful in e-commerce transactions.
- c) I am afraid of cyber fraud in my e-commerce transactions.
- d) I think that cyber fraud is a threat to everyone in e-commerce

Perceived Ease of Use

Perceived Ease of Use or perceived ease of use is a person's level of confidence that using a particular system does not require a lot of effort (Istianingsih and Wijanto, 2008, Diah Iskandar and Istianingsih, 2020). Although the business according to each person is different but in general to avoid rejection from system users for the system being developed, the system must be easily

applied by users without spending effort that is considered burdensome (Davis, 1989). This variable is measured by the following questions:

- a) I think that it's very easy to interact with the internet
- b) I think that it is very easy to shop via the internet (e-commerce)
- c) I think that it is very easy to get products through the internet
- d) I think that it is very easy to learn how to search for products via the internet
- e) I think that e-commerce is easy to use

Risk Perception

Risk perception is the identification of risks that can be experienced by consumers in connection with transactions using the internet. Pavlou (2003) also defines that risk perception as a possible loss / loss when obtaining an outcome. Risk perception in this study was measured by the following questions:

- a) I would feel safe to send sensitive information through the internet.
- b) I will feel safe to make online transactions (e-commerce)
- c) I feel that searching for information about products on the internet has a small risk
- d) I feel that buying products through online (e-commerce) has a small risk

E-commerce usage behavior

E-commerce usage behavior is an action taken by someone who is the intensity or frequency of users in using information technology (Teak, 201; Istianingsih and Wijanto, 2008; Diah Iskandar and Istianingsih, 2020). This variable is measured by the following questions:

- a) I am interested in using the internet to buy products
- b) I plan to use the internet to buy products in the coming months
- c) Buying a product on the internet is something that I want
- d) Overall, I will use the internet to buy the products I need.

The answer to each instrument that uses a Likert Scale with a value of 1 to 5 from agree to disagree to the research question.

3.2. Population and Sample

The population of this study is the active user community of e-commerce services that purchase products online. The sampling method used in this study is convenience sampling method, where the sample of this study is the method of selecting samples whose data is easily obtained so that researchers have the freedom to choose the fastest sample at a relatively low cost. This convenience sampling method was chosen in connection with the existence of rules to limit physical contact in accordance with the rules of the PSBB (Large-scale Social Bounding) by the Indonesian government during the COVID Pandemic¹⁹. Researchers distributed e-mail questionnaires and Google friend forms to be distributed to others. The number of questionnaires received back in the filled state was 150. With the number of research parameters, in this case the number of construct indicators as much as 18, then the number of respondents as much as 150 is ideal.

3.3. Data analysis technique

Testing is done to find out directly the regression coefficient or the magnitude of Perceived of Cyber Fraud (X1), Perceived Ease of Use (X2) and Perceived Risk Perception (X3), against the Behavior E-commerce System Use (Y) using multiple linear regression analysis can formulated as follows:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where:

- Y = E-commerce usage behavior
- a = constant
- $\beta_1 + \beta_2 + \beta_3$ = coefficient regression
- X₁ = Perceived of cyber fraud
- X₂ = Perceived ease of use
- X₃ = Risk Perception
- e = Error

4. Research Result

4.1. Respondents Profile

Table 1. Profile of Respondents by Gender

No.	Gender	Total	Percentage
1	Male	34	23%
2	Female	116	77%
Total		150	100 %

Table 1 shows that male respondents totaled 34 people with a percentage of 23%, while female respondents totaled 116 people with a percentage of 77%. Thus, it can be concluded that the most respondents are female respondents

Table 2. Profile of Respondents by Age

No.	Age	Total	Percentage
1	<20 y.o	8	5%
2	20-29 y.o	142	95%
Total		150	100 %

Based on table 4.3 it can be seen that the number of respondents based on age amounts to 100 people. The respondents consisted of respondents aged less than 20 years totaling 8 people with a percentage of 5%, while respondents aged 20-29 years amounted to 142 people with a percentage of 95%. Thus, it can be concluded that the most respondents are respondents aged 20-29 years.

Table 3. Profile of Respondents Based on Experience Using the Internet

No.	Experience Using Internet	Total	Percentage
1	< 5 years	14	9%
2	5-10 years	91	61%
3	> 10 years	45	30%
Total		150	100 %

Respondents based on experience of internet usage per year amounted to 100 respondents. Respondents with experience of internet use <5 years as many as 14 people or (9%), respondents with experience of using internet 5-10 years as many as 91 people or (61%), and respondents with experience of using the internet for more than 10 years for 45 people or (30%). Thus, it can be concluded that the most respondents are with 5-10 years of internet use experience.

4.2. Research Instrument Test Results

a. Validity Test Results

The following table shows the results of the validity test of the four variables used in this study, namely perceived cyber fraud, ease of use, Risk Perception and E-commerce usage behavior with samples 150 respondents.

Table 4. Validity of Perceived of Cyber Fraud

Question Item Number	Pearson Corelation	Sig (2-Tailed)	Result
1 (CF1)	.782**	0,000	Valid
2 (CF2)	.751**	0,000	Valid
3 (CF3)	.708**	0,000	Valid
4 (CF4)	.717**	0,000	Valid

Table 4. shows the perceived variable of cyber fraud has valid criteria for all question items with a significance value of less than 0.05, so that the perceived variable of cyber fraud can be used in research because it is able to reveal something that will be measured in this study.

Table 5. Validity of Perceived Ease of use

Question Item Number	Pearson Corelation	Sig (2-Tailed)	Result
1 (PE1)	.691**	0,000	Valid

2 (PE2)	.829 ^{**}	0,000	Valid
3 (PE3)	.803 ^{**}	0,000	Valid
4 (PE4)	.657 ^{**}	0,000	Valid

Table 5 shows the perceived ease of use variable has valid criteria for all question items with a significance value of less than 0.05, so that the perceived ease of use variable can be used in research because it is able to express something that will be measured in this study.

Table 6. Validity of Perceived Risk

Question Item Number	Pearson Corelation	Sig (2-Tailed)	Result
1 (PR1)	.685 ^{**}	0,000	Valid
2 (PR2)	.763 ^{**}	0,000	Valid
3 (PR3)	.574 ^{**}	0,000	Valid
4 (PR4)	.508 ^{**}	0,000	Valid
5 (PR5)	.687 ^{**}	0,000	Valid
6 (PR6)	.794 ^{**}	0,000	Valid

Table 6 shows the perceived risk variable has valid criteria for all question items with a significance value of less than 0.05, so the perceived risk variable can be used in research because it is able to reveal something that will be measured in this study.

Table 7. Validity of E-commerce Usage Behavior

Question Item Number	Pearson Corelation	Sig (2-Tailed)	Result
1 (PP1)	.686 ^{**}	0,000	Valid
2 (PP2)	.868 ^{**}	0,000	Valid
3 (PP3)	.775 ^{**}	0,000	Valid
4 (PP4)	.699 ^{**}	0,000	Valid

Table 7 shows the e-commerce usage behavior variable has valid criteria for all question items with a significance value of less than 0.05, so the e-commerce system usage behavior variable can be used in research because it is able to reveal something that will be measured in this study.

b. Reliability Test Results

Table 8. Reliability Test Results

Variable Name	Cronbach's Alpha	Result
Perceived of Cyber Fraud	0,718	Reliable
Ease of Use	0,725	Reliable
Risk Perception	0,758	Reliable
E-commerce Usage Behavior	0,753	Reliable

Table 8 shows the value of Cronbach Alpha () on the variable perceived of cyber fraud at 0.718, perceived ease of use at 0.725, perceived risk at 0.758, and e-commerce use behavior at 0.753. Thus, it can be concluded that the statements in this questionnaire are reliable because they have a Cronbach Alpha value greater than 0.7. This shows that each statement item used will be able to obtain consistent data which means that if the statement is submitted again will get an answer that is relatively the same as the previous answer.

4.3. Model Conformity Test

The coefficient of determination (R²) test shows the amount of Adjusted R Square value used to evaluate the best regression model.

Table 9. Determination Coefficient Test Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,492 ^a	,253	,227	2,433

a. Predictors: (Constant), TPR, TPE, TCF

b. Dependent Variable: TPP

Based on the results it can be seen that the Adjusted R square value obtained by 0.227 (22.7%) shows that 22.7% interest in using e-commerce systems is influenced by perceived of cyber fraud, perceived ease of use and perceived risk, while 77, 3% (100% -22.7%) interest in using e-commerce systems is influenced by other variables outside the variable model of this study.

Table 10. F Test Result ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	71,855	3	23,972	5,796	,001 ^b
Residual	396,905	146	4,334		
Total	468,760	149			

a. Dependent Variable: TPP

b. Predictors: (Constant), TPR, TPE, TCF

F test results of 5.796 with a probability value of 0.001 means that the variable perceived of cyber fraud, perceived ease of use, and perceived risk significantly influence the behavior of e-commerce use simultaneously and show that this research model is Fit with the data.

4.4. Hypothesis test

Table 11. Hypothesis Test Result

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9,806	3,194		5,013	,000
	TCF	-,436	,301	-,406	-2,671	,098
	TPE	,371	,198	,363	3,780	,007
	TPR	,434	,231	,571	2,661	,012

a. Dependent Variable: TPP

From table 11, the following conclusions can be drawn:

a. The Perceived of Cyber Fraud variable has a significance probability value of 0.098 so it can be concluded that the perceived of cyber fraud has no influence on the behavior of e-commerce use. So it can be stated that H1 was rejected.

b. Perceived Ease of Use variable has a significance value of 0.007 so it can be concluded that perceived ease of use has a significant effect on e-commerce usage behavior. So it can be concluded that H2 is accepted.

c. Perceived Risk variable has a significance probability value of 0.012 so it can be concluded that Perceived Risk has a significant effect on e-commerce usage behavior. So it can be seen that the hypothesis H3 is accepted.

4.5. Discussion

After testing the classical assumptions and it has been proven that the data is free from the classical assumptions of normality, heteroscedasticity, multicollinearity, the data in this study are eligible for multiple regression analysis testing. Multiple linear regression analysis was

performed to determine the regression coefficient or the magnitude of the effect of the variable Perceived of Cyber Fraud (X1), Perceived Ease of Use (X2), Perceived Risk (X3) on the behavior of e-commerce use.

4.5.1. The effect of perceived cyber fraud on e-commerce usage behavior

T test results showed that the perceived variable of cyber fraud had a coefficient of -0.436 and a significance value of 0.098 was greater than the alpha value ($\alpha = 0.05$). This shows that the perceived variable of cyber fraud has no influence on the behavior of the use of e-commerce systems. This shows that the perceived of cyber fraud does not preclude respondents' interest in making transactions using e-commerce systems. The results of this study are not consistent with research conducted by Ainur Rofiq (2012) which states that the perceived of cyber fraud has a negative influence on the interest in using e-commerce.

4.5.2. The influence of perceived ease of use on e-commerce usage behavior

T test results showed that the perceived ease of use variable had a coefficient of 0.371 and a significance value of 0.007 was smaller than the alpha value ($\alpha = 0.05$). This means that the variable perceived ease of use affects the behavior of the use of e-commerce systems. This result is consistent with research conducted by Andrie Cesario Shomad (2013), Pradita and Zaki (2012), Iwan and Rahmahwati (2014), and Krisnu Putra Yutadi (2014), Istianingsih and Wijanto (2008) and Diah Iskandar and Istianingsih (2020)).

Based on the results of research conducted by researchers and based on research conducted by previous researchers, it can be concluded that the perception of convenience is a TAM variable that also has an important role in influencing interest in using e-commerce, in addition to the variable perception of usefulness. Companies or vendors need to pay attention to the services provided so that individuals can easily access the desired website so that it will indirectly influence an individual to use e-commerce services continuously. Thus, it can be explained that the higher the ease that is obtained from the e-commerce system, the positive interest in using the system will arise from its users and lead to the greater desire to use the e-commerce system.

4.5.3. The effect of perceived risk on e-commerce usage behavior

T test results show the perceived risk variable has a coefficient of 0.434 and a significance value of 0.012 is smaller than the alpha value ($\alpha = 0.05$). This means that the perceived risk variable has a positive effect on e-commerce usage behavior. These results are consistent with research conducted by Nazar and Syahran (2008) and Krisnu Putra Yutadi (2014).

Krisnu Putra Yutadi (2014) conducted research on individual factors that influenced the interest in using e-commerce. In his research, Krisnu Putra Yutadi (2014) states that risk perception has a significant influence on interest in using e-commerce. The more positive information about web e-commerce, the smaller the risk faced by respondents. Then the action to reduce or reduce the level of risk will affect attitude and will increase the use of e-commerce.

Nazar and Syahran (2008) conducted research on the factors influencing privacy, security, trustworthiness, and experience of intentions to transact online. The results of the study mentioned that risk perception has a positive influence on attitudes to transact online. To minimize the level of risk faced by consumers, before making a transaction consumers try to collect information about online stores. Based on this information the consumer can predict how much risk he faces. The greater the positive information obtained, the smaller the level of risk perceived so that the greater the likelihood of conducting transactions online.

Respondents think that before they make a transaction with the e-commerce web they will collect information about the web. Based on this information respondents can predict how much risk they face when going shopping online. The more positive information about web e-commerce, the smaller the risk faced by respondents.

5. Research Conclusions

Based on the results of the study, data analysis and interpretation the conclusions of this study are drawn as follows:

1. Perceived of cyber fraud does not significantly influence the behavior of e-commerce use. This shows that the perceived of cyber fraud does not prevent respondents from using the e-commerce system.
2. Perceived ease of use has a positive effect on the behavior of the use of e-commerce systems. This shows that the higher the ease of getting from an e-commerce system, the

positive interest to use the system will arise from its users and cause the greater desire to use e-commerce. The perceived ease of use factor is an element that is strong enough to shape the behavior of the use of e-commerce systems.

3. Risk perception has a positive effect on e-commerce usage behavior. This shows that when someone really knows what risks will occur when making transactions using e-commerce, the greater the desire to use e-commerce. Then the action to reduce or reduce the level of risk will affect attitudes and will increase the behavior of e-commerce use.

This study has deficiencies in the sample size of 150 respondents. The variables in this study are also variables that have been frequently studied by previous researchers, but the results of the research have inconsistent results. Then the researchers suggest for further researchers: 1) Increase the number of samples studied and expand the research location so that it is expected that the level of generalization from the analysis will be more accurate and good. 2) Further research can also use other data collection methods such as direct interviews so that respondents can honestly answer questions. 3) Future research can present different results for other variables more significantly, such as variables of trust, perceived usefulness, perceived security, perceived privacy, and others.

This research using the TAM model is used to assess the determinants of acceptance of an internet-based transaction system so that the service provider or web vendor can design an online transaction system program so that it can be used as much as possible. This research has implications on the practice of designing and implementing e-commerce-based information systems. Thus, an existing system needs the attention of the management so that the system can run in accordance with the objectives set. The results of this study can provide input for online businesses to pay attention to the perception of fraud in cyberspace, the level of risk perception when conducting online transactions, and the perceived ease of online transactions. It is intended that online transactions in Indonesia can develop better and as an alternative to buying and selling transactions.

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